

**ORIGINAL RESEARCH:
EMPIRICAL RESEARCH - QUANTITATIVE**

Protective role of mindfulness, self-compassion and psychological flexibility on the burnout subtypes among psychology and nursing undergraduate students

David Martínez-Rubio^{1,2,3}  | Cristina Martínez-Brotos¹ | Alicia Monreal-Bartolomé^{4,5} | Alberto Barceló-Soler^{4,5} | Daniel Campos^{4,6}  | Adrián Pérez-Aranda^{4,7,8}  | Ariadna Colomer-Carbonell^{8,9} | Sergio Cervera-Torres¹⁰ | Silvia Solé¹¹ | Yolanda Moreno¹² | Jesús Montero-Marín¹³

¹Psicoforma, Integral Psychology Center, Valencia, Spain

²Excellence Research Network PROMOSAM (PSI2014-56303-REDT), Madrid, Spain

³Department of Psychology, Faculty of Health Sciences, Universidad Europea de Valencia, Valencia, Spain

⁴Aragon Institute for Health Research, IIS Aragon, Zaragoza, Spain

⁵Primary Care Prevention and Health Promotion Research Network, RedIAPP, Madrid, Spain

⁶Department of Psychology and Sociology, University of Zaragoza, Huesca, Spain

⁷Department of Basic Psychology, Faculty of Psychology, Autonomous University of Barcelona, Cerdanyola del Vallès, Spain

⁸AGORA Research Group, Teaching, Research & Innovation Unit, Parc Sanitari Sant Joan de Déu, Barcelona, Spain

⁹Institut de Recerca Sant Joan de Déu, Esplugues de Llobregat, Spain

¹⁰Salumedia Labs, Research Division of Adhera Health, Inc, Palo Alto, CA, USA

¹¹Facultat d'Infermeria i Fisioteràpia, Grup GESEC, Universitat de Lleida, Lleida, Spain

¹²Department of Sciences (CAFD), Faculty of Physical Activity and Sport Sciences, Catholic University of Valencia San Vicente Màrtir, Valencia, Spain

¹³Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford, UK

Correspondence

Daniel Campos, Department of Psychology and Sociology, Faculty of Human Sciences and Education, University of Zaragoza, C/ Valentín Cardenera, 4, Huesca 22003, Spain.
Email: camposdcb@gmail.com

Adrián Pérez-Aranda, Department of Basic Psychology, Faculty of Psychology, Autonomous University of Barcelona, Edifici B, 08193 Bellaterra, Cerdanyola del Vallès, Barcelona, Spain.
Email: adrian.peara@gmail.com

Funding information

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sections.

Abstract

Aims: To explore the relationship between mindfulness, self-compassion and psychological flexibility, and the burnout subtypes in university students of the Psychology and Nursing degrees, and to analyse possible risk factors for developing burnout among socio-demographic and studies-related characteristics.

Design: Cross-sectional study conducted on a sample of 644 undergraduate students of Nursing and Psychology from two Spanish universities.

Methods: The study was conducted between December 2015 and May 2016. Bivariate Pearson's correlations were computed to analyse the association between mindfulness facets, self-compassion and psychological flexibility, and levels of burnout. Multivariate linear regression models and bivariate and multivariate binary logistic regressions were also computed.

Results: The three subtypes of burnout presented significant correlations with psychological flexibility, self-compassion and some mindfulness facets. Psychological

David Martínez-Rubio and Cristina Martínez-Brotos contributed equally and should be considered co-first authors.

flexibility, self-compassion and the mindfulness facets of observing and acting with awareness were significantly associated to burnout. Among the risk factors, 'year of study' was the only variable to show significantly higher risk for every burnout subtype.

Conclusion: The significant associations found between mindfulness, self-compassion, psychological flexibility and burnout levels underline the need of including these variables as therapeutic targets when addressing the burnout syndrome in university students.

Impact.

Undergraduate students, especially those of health sciences, often experience burnout. This study delves into the protective role of some psychological variables: mindfulness, self-compassion and psychological flexibility. These should be considered as potentially protective skills for developing burnout, and therefore, undergraduate students could be trained on these abilities to face their studies and their future profession to prevent experiencing burnout syndrome.

KEYWORDS

cross-sectional study, mindfulness, nursing, psychological flexibility, self-compassion, university students

1 | INTRODUCTION

Burnout syndrome can occur in any context where chronic stress is present, including the academic context (Carlin & Garcés de los Fayos Ruiz, 2010; Nakamura et al., 2014). University students constitute a population with high risk of developing burnout syndrome: they strive to achieve goals, and their performance is constantly being evaluated and, eventually, rewarded (Caballero & Bresó, 2015). Moreover, university studies related to the healthcare system, such as Nursing or Psychology, include some additional risk factors for developing burnout syndrome, such as the exposition to human suffering and the responsibility for others' health (Bullock et al., 2017; Montero-Marin et al., 2014; Nakamura et al., 2014; Pulido-Martos et al., 2012). The presence of stress factors together with inadequate coping strategies makes the development of the burnout syndrome very likely in university students, affecting their academic, future professional performance and quality of life (Beaumont et al., 2016; Bullock et al., 2017). Thus, studying the possible relationships and explanatory power of different risk and protective factors and the development of burnout in university students, especially in the health field, is considered relevant.

2 | BACKGROUND

The burnout syndrome is usually defined as a response to chronic work stress characterized by emotional exhaustion, depersonalization and lack of personal development (Maslach & Jackson, 1982). According to Farber (2001), three subtypes of burnout syndrome

can be defined depending on the implication that each person has with their work and how they cope with stress. The *frenetic* subtype occurs in people characterized by ambition and overload who put their work ahead of their health and personal life. The *under-challenged* subtype, whose main characteristic is the lack of personal development, arises in people whose work is composed of monotonous tasks which causes poorer performing in the workplace. The *worn-out* subtype, characterized by neglect, is typical for people who believe they don't have any control over results and feel that their effort is not recognized by the company or institution for which they work (Montero-Marin et al., 2009).

The incidence of burnout syndrome is notable in university students; the main stressors detected for this population are the concern for their performance in exams, the process of adaptation to the university environment, the study demands and the uncertainty about the future (González Ramírez & Landero Hernández, 2007). There are specific stressors in university studies related to the healthcare system such as the belief that one is not prepared to face work responsibilities, experiences related to death and illness during the training period, and the psychological pressure of being responsible for the health of other people (Bayram & Bilgel, 2008; da Silva et al., 2014; De Vibe et al., 2013; Killam et al., 2013). For example, some studies have recognized the attrition from nursing programmes and retention of nurses in the profession as international concerns and have related these phenomena to the impact of stress and the development of burnout syndrome (e.g., Deary et al., 2003).

In order to detect potentially protective skills that could be enhanced to prevent the burnout syndrome, several groups have developed different research lines; mindfulness-based programmes

have shown significant efficacy in facing the burnout syndrome in healthcare students (De Vibe et al., 2013; Finkelstein et al., 2007; Hunt et al., 2003; Warnecke et al., 2011). Mindfulness is defined as the awareness that emerges through paying attention on purpose, in the present moment and non-judgementally, to the unfolding of experience (Kabat-Zinn, 2003). It is conceptualized as a multifactorial construct composed of five facets (Baer et al., 2008): *observing*, which implies becoming aware of all the phenomena that occur in the mind without identifying with them; *describing*, or the ability to be aware of cognitive phenomena and be able to communicate them; *acting with awareness*, which is the ability to observe and experience moment to moment despite the mind's usual tendency to be on automatic pilot; *nonjudging of inner experience*, which refers to accepting our private events without judging them or ourselves; and *nonreactivity to the inner experience*, defined as the tendency to allow thoughts and feelings to come and go, without getting caught up in or carried away by them. In general, there is evidence that shows that practicing mindfulness exercises to develop the mentioned facets can be a useful resource in the prevention of burnout with small to medium effects (Suleiman-Martos et al., 2020). However, these studies have been conducted mainly in workplace environments, so studying if these results are maintained in the educational context is necessary.

In addition to mindfulness, two other related psychological constructs that are being studied in relation to the burnout syndrome are self-compassion and psychological flexibility. *Self-compassion* has been described by three elements: self-kindness, as an alternative to self-judgement; the feeling of belonging to a common humanity, as an alternative to the feeling of isolation; and mindfulness, as an alternative to over-identification with one's own thoughts or emotions (Barnard & Curry, 2011; Neff et al., 2019). It has been observed that the absence of the different elements of self-compassion could be related to the distinct burnout subtypes in primary healthcare professionals (Montero-Marin et al., 2016). The presence of self-judgement was associated with the frenetic burnout subtype; isolation was related to the under-challenged; and over-identification was associated with the worn-out. Among others, self-compassion correlates positively with well-being, quality of life, motivation and emotional intelligence (Baer et al., 2012; Campos et al., 2016; Hollis-Walker & Colosimo, 2011; Neff et al., 2007).

Psychological flexibility is the ability to contact the present moment more fully as a conscious human being and to change, or persist in, behaviour when doing so serves valued ends (Biglan et al., 2008). This construct is directly opposed to *experiential avoidance*, which implies the conscious intention to avoid being in contact with private aversive experiences, acting to modify them or the conditions that generate them, which in turn increases the risk of developing psychological problems such as depression, anxiety, poor work performance or substance abuse (Biglan, 2009; Hayes et al., 2006). Different studies have found strong associations between psychological flexibility and the burnout syndrome (Losa Iglesias et al., 2010; Noone & Hastings, 2011). These correlations have also been

described in the case of health professionals, whose constant exposure to human suffering may trigger emotional exhaustion through the usage of experiential avoidance (Ortiz-Fune et al., 2020).

In recent years, the interest in these concepts has allowed the development of studies that highlight the benefits of programmes that include mindfulness, self-compassion and psychological flexibility as key points to deal with psychological problems such as anxiety and depression, as well as the burnout syndrome (Duarte & Pinto-Gouveia, 2017; Heeren et al., 2015; Wersebe et al., 2018). However, to date, there are very few studies that delve into how these psychological variables behave in the profile of the university student, even though, as previously mentioned, they constitute a sector of the population with high risk of developing burnout (Neely et al., 2009). On the other hand, previous studies have studied potential socio-demographic and occupational risk factors associated with the development of the burnout subtypes in dental students (Mohebbi et al., 2019; Montero-Marín, García-Campayo, et al., 2011; Montero-Marin, Monticelli, et al., 2011; Montero-Marin, Skapinakis, et al., 2011). However, so far, this has not been studied in university students of Psychology and Nursing.

3 | THE STUDY

3.1 | Aims

The main aim of the present study was to explore the relationship between mindfulness, self-compassion and psychological flexibility, and the burnout subtypes in university students of the Psychology and Nursing degrees. As additional objectives, the study aimed to investigate the explanatory power of these variables on the burnout subtypes and to detect possible risk factors among socio-demographic and academic characteristics for developing the burnout subtypes.

3.2 | Design

A cross-sectional self-report design was employed, with a sample of university students of Nursing or Psychology in the city of Valencia, Spain. Purposeful sampling was used for identifying potential participants in the San Vicente Mártir Catholic University of Valencia, as well as the University of Valencia (UV).

3.3 | Participants

Participants provided their informed consent by reading and approving the study aims, the voluntary nature of participation and the confidentiality of the data. The inclusion criteria were (1) being studying college education in the field of nursing or psychology, (2) signing informed consent and (3) ability to understand written Spanish. The final sample included 644 students.

3.4 | Data collection

Students were asked to respond individually the questionnaires through an online survey (<https://es.surveymonkey.com>) or via paper form if they could not access the online form (46% of the cases). The survey was administered from December 2015 to May 2016.

3.5 | Validity and reliability

3.5.1 | Demographics

The following socio-demographic characteristics were collected: age, gender, year of study, university, faculty, campus, academic year, weekly hours spent on studying, whether one was in a stable relationship, children, stable job, failed subjects over the previous exam period, days left for the next official examination session, place of residence, scholarship, and perceived quality of parental support for one's studies.

3.5.2 | Burnout Clinical Subtype Questionnaire-Student Survey

The Spanish version of The Burnout Clinical Subtype Questionnaire-Student Survey (BCSQ-12-SS; Montero-Marín, Monticelli, et al., 2011) was used. It consists of 12 items evenly distributed among three dimensions: 'overload', 'lack of development' and 'neglect'. The response format is a Likert-type scale with seven response options (1 = *completely disagree*, 7 = *completely agree*). Higher scores represent more burnout levels. The BCSQ-12-SS has demonstrated high internal consistency for each dimension, with adequate criterion validity (Montero-Marín & García-Campayo, 2010; Montero-Marín, Skapinakis, et al., 2011).

3.5.3 | Five Mindfulness Facets Questionnaire-Short Form

The Five Mindfulness Facets Questionnaire-Short Form (FFMQ-SF; Baer et al., 2006) is a scale of 20 items that measures the five factors of mindfulness: observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience. The response format is a 5-point scale (1 = *never or very rarely true*, 5 = *very often or always true*). Higher scores represent greater levels of mindfulness. The scale is valid and reliable to measure the experience of mindfulness (Coo Calcagni & Salanova Soria, 2016).

3.5.4 | Acceptance and Action Scale

The Acceptance and Action Scale (AAQ-II; Bond et al., 2011) consists of seven items measuring experiential avoidance, understood

as the opposite of psychological flexibility (i.e., psychological inflexibility), that is, the conscious intention to avoid being in contact with private aversive experiences (Biglan, 2009; Hayes et al., 2006). Each item is presented in a 7-point scale, where higher scores indicate a higher tendency to experiential avoidance. The Spanish version of the AAQ-II has shown strong psychometric properties (Ruiz et al., 2013).

3.5.5 | Self-Compassion Scale-Short Form

The Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011; García-Campayo et al., 2014) consists of 12 items that provide a useful overview of how a person might typically respond to themselves during times of struggle. The SCS-SF assesses various aspects of self-compassion including one's sense of self-kindness, common humanity and mindfulness. This scale can be summarized by using a total score that has demonstrated adequate psychometric properties (Neff et al., 2019). The Spanish adaptation of the SCS-SF has proved to be valid for the evaluation of self-compassion among the general population (García-Campayo et al., 2014).

3.6 | Data analysis

Complete cases analyses were developed (39 participants had incomplete data and therefore were excluded from the study). Following the path drawn by previous studies (Montero-Marín, García-Campayo, et al., 2011; Montero-Marín, Monticelli, et al., 2011; Montero-Marín, Skapinakis, et al., 2011), the continuous socio-demographic and occupational variables were recorded as dummy variables as can be seen in Table 1. Moreover, the data analysis plan was based on previous research exploring the development of different burnout subtypes for conceptual replication and to obtain comparable information (i.e., Montero-Marín, García-Campayo, et al., 2011; Montero-Marín, Monticelli, et al., 2011; Montero-Marín, Skapinakis, et al., 2011). First, a descriptive analysis of participant characteristics using frequencies and percentages was carried out.

Pearson's correlations were calculated to assess the level of association between the study variables, all of which were treated as continuous variables; subsequently, multiple regressions were carried out, using psychological inflexibility, self-compassion and mindfulness facets as explanatory variables, and the level of each burnout subtype as criterion variable (dependent variable). Significant explanatory variables of burnout subtypes were included in a 'stepwise' multiple regression analysis in order to determine which combination of variables predicted each burnout subtype best and to rule out potential interaction effects. The model's accuracy was assessed by the R -squared (R^2). An ANOVA of the regression model was calculated to assess if the estimation of the dependent variable was

TABLE 1 Socio-demographic and occupational characteristics of study participants

	Total (n = 644)
Age (years)	
<20	269 (42.0%)
20–22	186 (29.0%)
>22	186 (29.0%)
Gender	
Male	146 (22.7%)
Female	496 (77.3%)
Stable relationship	
Yes	312 (49.4%)
No	319 (50.6%)
Children	
None	607 (95.1%)
One or more	31 (4.9%)
Job	
Yes	86 (13.6%)
No	546 (86.4%)
Place of residence	
With family	431 (67.1%)
Share flat	120 (18.7%)
Living alone	23 (3.6%)
Student residence	16 (2.5%)
Living with couple	52 (8.1%)
Scholarship	
Yes	147 (34.3%)
No	281 (65.7%)
Degree	
Nursing	385 (59.8%)
Psychology	259 (40.2%)
Year of study	
1°	335 (52.0%)
2°	150 (23.3%)
3°	72 (11.2%)
4°	80 (12.4%)
5°	7 (1.1%)
University	
CUV	453 (70.3%)
UV	191 (29.7%)
Family support	
Insufficient	38 (8.9%)
Good	116 (27.2%)
Very good	272 (63.8%)
Weekly study (hours)	
<30	253 (39.3%)
30–40	269 (41.8%)

(Continues)

TABLE 1 (Continued)

	Total (n = 644)
>40	121 (18.8%)
Failed subjects	
0%	491 (76.4%)
1%–25%	74 (11.5%)
26%–50%	50 (7.8%)
51%–75%	10 (1.6%)
>75%	18 (2.8%)
Next exam call (days)	
<18	207 (32.5%)
18–25	255 (40.1%)
>25	174 (27.4%)

Abbreviations: CUV, Catholic University of Valencia; UV, University of Valencia.

significantly improved. For each explanatory variable, the coefficients of the regression model and the *t* scores were calculated to ensure that the variable contributed significantly to the regression model. The variance-inflated factor (VIF) and the tolerance were calculated in each model to assess the assumption of non-multicollinearity.

Finally, in order to detect potential risk factors for developing the burnout subtypes, we firstly conducted a bivariate analysis using simple binary logistic regression (LR) to yield odds ratios (ORs) with a 95% confidence interval (CI) to assess the potential association between the burnout subtypes and socio-demographic and academic variables of interest. Participants situated below the 75th percentile (P_{75}) for each dimension of the BCSQ-12-SS were considered to have 'low scores', whereas those situated above the P_{75} were considered to have 'high scores' (Montero-Marín, García-Campayo, et al., 2011; Vercambre et al., 2009). The statistical significance of the association was assessed using the Wald test. The factors that showed significant values as a result of the simple LR were included in a multivariate LR model to estimate the corresponding adjusted ORs and 95% CIs. The adjustment of each multivariate model was assessed using the Hosmer–Lemeshow test, and according to the percentage of correctly classified cases. Data analysis was carried out using IBM Statistical Package for the Social Sciences (SPSS) v21, Chicago, IL.

3.7 | Ethical considerations

Informed consent was obtained from the participants before they completed the survey. The study was developed according to national and international ethical standards (Helsinki and Tokyo Conventions), and it was approved by the Research Ethics Committee of the University of Valencia (project: 'Stress in University Students'; registry number: H1455835241950).

4 | RESULTS

4.1 | Description of the sample

The sample included 644 students, of which 77.3% were women, and the mean age was 22.24 years old ($SD = 6.11$). When comparing the two University degrees (i.e., nursing vs. psychology), many statistically significant differences, in terms of socio-demographic and occupational characteristics, were observed, suggesting that students of the two university degrees came from different backgrounds. Table 1 shows the socio-demographic and occupational characteristics for the total sample and also for each university degree separately.

4.2 | Relationships of mindfulness, self-compassion, psychological flexibility and burnout

Table 2 shows the Pearson's raw correlations between the different burnout subtypes dimensions and the potentially protective psychological variables of mindfulness facets, self-compassion and psychological flexibility.

4.3 | Explanatory power of mindfulness, self-compassion and psychological flexibility on burnout

Regarding the multiple regression analysis, the variable that better explained the level of 'overload' was psychological inflexibility (AAQ-II), followed by acting with awareness (FFMQ) and self-compassion (SCS). The rest of the variables were not included in the final model because they did not increase its explanatory power significantly. For the multiple regression model tested, with three independent variables, 7% of the variance of 'overload' was explained. The ANOVA of the regression model showed a significant

TABLE 2 Correlations between the burnout subtypes and the protective psychological variables

	Overload	Lack of development	Neglect
AAQ-II	0.22***	0.21***	0.26***
SCS	-0.20***	-0.12**	-0.30***
FFMQ observing	0.07	0.13**	-0.04
FFMQ describing	-0.08	-0.04	-0.16***
FFMQ acting with awareness	-0.01	-0.12**	-0.30***
FFMQ non-judging	-0.13**	-0.14***	-0.25***
FFMQ non-reacting	-0.01	0.03	-0.14***

Note: Values are Pearson's correlations.

Abbreviations: AAQ-II, Acceptance and Action Questionnaire; FFMQ, Five Facets of Mindfulness Questionnaire; SCS, Self-Compassion Scale. * $p < 0.050$; ** $p < 0.01$; *** $p < 0.001$.

adjustment ($F = 15.09$; $p < 0.001$). For the coefficients of the regression model, the t scores indicated that the variables included by the stepwise method contributed significantly to the regression model. The VIF as well as the tolerance value indicated that the assumption of non-multicollinearity was met (Table 3).

'Lack of development' was explained by psychological inflexibility (AAQ-II), followed by the mindfulness facet of observing (FFMQ). For the multiple regression model tested, with two independent variables, 5% of the variance of 'lack of development' was explained. The ANOVA of the regression model showed a significant adjustment ($F = 17.81$; $p < 0.001$). The independent variables considered contributed significantly to the multiple regression model. According to the VIF as well as the tolerance value, the assumption of non-multicollinearity was met (Table 3).

The variable that better explained the level of 'neglect' was acting with awareness (FFMQ), followed by self-compassion (SCS) and observing (FFMQ). For the multiple regression model with three independent variables, 13% of the variance of 'neglect' was explained. The ANOVA of the multiple regression model showed a significant adjustment ($F = 33.18$; $p < 0.001$). For the coefficients of the multiple regression model, the t scores indicated that the variables considered contributed significantly to explaining variance of 'neglect'. The VIF as well as the tolerance values indicated that the assumption of non-multicollinearity was met (see Table 3).

4.4 | Potential socio-demographic and academic risk factors associated with burnout

Table 4 displays the results of the bivariate analysis (simple LR) on the potential socio-demographic and academic risk factors. The variables 'place of residence', 'year of study', 'age' and 'weekly hours spent on studying' showed significant results on the status variable 'overload'. After the multivariate analysis, 'place of residence', 'age' and 'weekly hours spent on studying' maintained their significant results. Those students living with their couple, when compared with those living with their family, showed an OR = 2.09 (95% CI = 1.05–4.15; $p = 0.035$). Students older than 22 years old, compared with those who were younger than 20 years old, showed an OR = 1.82 (95% CI = 1.05–3.16; $p = 0.032$), and those who dedicated >40 h to their studies every week, when compared with those dedicating <30 h, showed an OR = 3.80 (95% CI = 2.26–6.38; $p < 0.001$). The adjustment of the model was acceptable ($\chi^2 = 5.44$; $df = 8$; $p = 0.710$), with 77% correctly classified cases. The multivariate model explained approximately 10% of the variation on the dependent variable 'overload'.

The variables 'place of residence' and 'year of study' showed significant results on the status variable 'lack of development' (Table 4). Both 'place of residence' and 'year of study' presented significant results after the multivariate analysis on 'lack of development'. Specifically, those students who shared a flat, when compared with those living with their family, showed an OR = 1.65 (95% CI = 1.04–2.64; $p = 0.035$), and students living alone presented an

TABLE 3 Multiple linear regressions for every scale of the BCSQ-12-SS

Significant variables	Adjusted R ²	β	t	Tolerance	VIF	F
Overload						
AAQ-II	0.05	0.21	4.10***	0.58	1.73	15.09***
FFMQ acting with awareness	0.06	0.12	2.91**	0.84	1.19	
SCS	0.07	-0.10	-2.11*	0.63	1.59	
Lack of development						
AAQ-II	0.04	0.20	5.09***	0.99	1.00	17.81***
FFMQ Observing	0.05	0.11	2.90**	0.99	1.00	
Neglect						
FFMQ acting with awareness	0.08	-0.24	-6.11***	0.89	1.12	33.18***
SCS	0.13	-0.22	-5.68***	0.92	1.09	
FFMQ observing	0.13	-0.08	-2.13*	0.97	1.03	

Abbreviations: AAQ-II, Acceptance and Action Questionnaire; FFMQ, Five Facets of Mindfulness Questionnaire; SCS, Self-Compassion Scale; VIF, variance inflated factor; β , standardized slope.

* $p < 0.050$; ** $p < 0.010$; *** $p < 0.001$.

OR = 2.63 (95% CI = 1.08–6.40; $p = 0.034$). Fourth-year students, when compared with first-year students, showed an OR = 2.47 (95% CI = 1.45–4.23; $p = 0.001$). The adjustment of the model was acceptable ($\chi^2 = 1.89$; $df = 6$; $p = 0.930$), with 77% correctly classified cases. The model explained approximately 5% of the variation on the dependent variable 'lack of development'.

The variables 'gender', 'scholarship', 'year of study', 'family support', 'weekly study hours' and 'failed subjects over the previous exam period' showed significant results on the status variable 'lack of development' (Table 4). The variables 'year of study', 'family support' and 'failed subjects' presented significant results after the multivariate analysis. Specifically, students who received very good support by their family, when compared with those who received insufficient family support, showed an OR = 0.29 (95% CI = 0.11–0.72; $p = 0.008$). Fourth-year students, when compared with first-year students, showed an OR = 0.38 (95% CI = 0.15–0.98; $p = 0.046$). Students who failed 26%–50% subjects, when compared with those who passed everything, yielded an OR = 2.57 (95% CI = 1.18–5.60; $p = 0.018$), and students who failed 51%–75% subjects, an OR = 8.96 (95% CI = 2.18–36.74; $p = 0.002$). The adjustment of the model was acceptable ($\chi^2 = 9.18$; $df = 8$; $p = 0.328$), with 86% correctly classified cases. The multivariate model explained approximately 20% of the variation on the dependent variable 'lack of development'.

5 | DISCUSSION

The 'overload' dimension of the frenetic burnout subtype presented a significant positive correlation with psychological inflexibility, as well as significant negative correlations with self-compassion and the mindfulness facet of non-judging. These findings are consistent with what previous studies have reported (e.g., Gracia-Gracia & Oliván-Blázquez, 2017; Montero-Marín et al., 2015; Ruiz

& Odriozola-González, 2017) and would indicate that the frenetic burnout subtype presents a tendency to consciously avoid focusing on certain distressful thoughts or emotions and also to attach to thoughts and judge them with certain severity (Montero-Marín et al., 2016). The multiple regression analyses indicated that the level of overload could be mainly explained by psychological inflexibility, absence of self-compassion and the mindfulness facet of acting with awareness. This mindfulness facet refers to the ability to focus on one's activities in the here and now, with special attention monitoring of own actions (Lindsay & Creswell, 2017), contrarily to living on 'automatic pilot' (Baer et al., 2008); it is a key component of psychological flexibility (McCracken & Morley, 2014) and has been reported to be associated with positive psychological outcomes (Bränström et al., 2010). However, and interestingly, according to our results, this continuous attention and involvement might already be present in the frenetic burnout subtype and its overload dimension to some extent, and it could be due to the high levels of engagement that characterize this burnout profile, which even put in risk their own health and personal life in the pursuit of expected success (Montero-Marín, Skapinakis, et al., 2011).

For what concerns to the under-challenged subtype, measured by the 'lack of development' dimension, negative significant correlations were observed with the mindfulness facets of acting with awareness, non-judging, and with self-compassion; also, a positive correlation with observing and psychological inflexibility was found. Some of these associations had already been reported previously (Montero-Marín et al., 2016), suggesting that people who meet the under-challenged subtype often act under the 'automatic pilot' (Baer et al., 2008) mentioned above, judge themselves in a negative way without compassion for what they think and feel and are unable to move towards their objectives while experiencing distressful thoughts or emotions. The linear regression model for this burnout subtype included psychological inflexibility and the mindfulness

TABLE 4 Bivariate analysis for overload ('frenetic' subtype), lack of development ('under-challenged' subtype) and neglect ('worn-out' subtype)

Factor	Overload			p	Lack of development	
	High score (%)	Low score (%)	Raw OR (95% CI)		High score (%)	Low score (%)
Age						
<20	49 (18.2)	220 (81.8)	ref.		57 (21.2)	212 (78.8)
20–22	43 (23.1)	143 (76.9)	1.35 (0.85–2.14)	0.201	46 (24.7)	140 (75.3)
>22	58 (31.2)	128 (68.8)	2.03 (1.31–3.15)	0.001	38 (20.4)	148 (79.6)
Gender						
Female	114 (23.0)	382 (77.0)	ref.		103 (20.8)	393 (79.2)
Male	36 (24.7)	110 (75.3)	1.10 (0.71–1.68)	0.674	39 (26.7)	107 (73.3)
Stable relationship						
Yes	74 (23.7)	238 (76.3)	ref.		60(19.2)	252(80.8)
No	73 (22.9)	246 (77.1)	0.96 (0.66–1.38)	0.804	81(25.4)	238(74.6)
Children						
None	138 (22.7)	469 (77.3)	ref.		138 (22.7)	469 (77.3)
One or more	11 (35.5)	20 (64.5)	1.87 (0.87–4.00)	0.107	4 (12.9)	27 (87.1)
Job						
Yes	23 (26.7)	63 (73.3)	ref.		16 (18.6)	70 (81.4)
No	123 (22.5)	423 (77.5)	0.80 (0.47–1.34)	0.389	126 (23.1)	420 (76.9)
Place of residence						
With family	92 (21.3)	339 (78.7)	ref.		87 (20.2)	344 (79.8)
Share flat	25 (20.8)	95 (79.2)	0.97 (0.59–1.59)	0.903	34 (28.3)	86 (71.7)
Living alone	8 (34.8)	15 (65.2)	1.97 (0.81–4.78)	0.136	9 (39.1)	14 (60.9)
Student residence	4 (25.0)	12 (75.0)	1.23 (0.39–3.90)	0.727	2 (12.5)	14 (87.5)
Living with my couple	20 (38.5)	32 (61.5)	2.30 (1.26–4.21)	0.007	11 (21.2)	41 (78.8)
Scholarship						
Yes	36 (24.5)	111 (75.5)	ref.		32 (21.8)	115 (78.2)
No	59 (21.0)	222 (79.0)	0.82 (0.51–1.32)	0.409	66 (23.5)	215 (76.5)
Year of study						
1°	74 (22.1)	261 (77.9)	ref.		66 (19.7)	269 (80.3)
2°	30 (20.0)	120 (80.0)	0.88 (0.55–1.42)	0.604	30 (20.0)	120 (80)
3°	17 (23.6)	55 (76.4)	1.09 (0.60–1.99)	0.779	15 (20.8)	57 (79.2)
4°	28 (35.0)	52 (65.0)	1.90 (1.12–3.22)	0.017	30 (37.5)	50 (62.5)
5°	1 (14.3)	6 (85.7)	0.59 (0.70–4.96)	0.625	2 (28.6)	5 (71.4)
Degree						
Psychology	52 (20.1)	207 (79.9)	ref.		67 (25.9)	192 (74.1)
Nursing	98 (25.5)	287 (74.5)	1.36 (0.93–1.99)	0.114	76 (19.7)	309 (80.3)
University						
UCV	104 (23.0)	349 (77.0)	ref.		99 (21.9)	354 (78.1)
UV	46 (24.1)	145 (75.9)	1.07 (0.72–1.58)	0.758	44 (23.0)	147 (77.0)
Family support						
Insufficient	10 (26.3)	28 (73.7)	ref.		11 (28.9)	27 (71.1)
Good	30 (25.9)	86 (74.1)	0.98 (0.43–2.25)	0.956	31 (26.7)	85 (73.3)
Very good	54 (19.9)	218 (80.1)	0.69 (0.32–1.52)	0.359	56 (20.6)	216 (79.4)
Weekly study (hours)						
<30	43 (17.0)	210 (83.0)	ref.		54 (21.3)	199 (78.7)

		Neglect			
Raw OR (95% CI)	<i>p</i>	High score (%)	Low score (%)	Raw OR (95% CI)	<i>p</i>
ref.		43 (16)	226 (84)	ref.	
1.22 (0.79–1.90)	0.375	31 (16.7)	155 (83.3)	1.05 (0.63–1.74)	0.846
0.96 (0.60–1.51)	0.845	31 (16.7)	155 (83.3)	1.05 (0.63–1.74)	0.846
ref.		74 (14.9)	422 (85.1)	ref.	
1.39 (0.91–2.13)	0.129	32 (21.9)	114 (78.1)	1.601 (1.01–2.54)	0.047
ref.		44(14.1)	268 (85.9)	ref.	
1.43 (0.98–1.09)	0.064	62(19.4)	257 (80.6)	1.47 (0.96–2.24)	0.074
ref.		102 (16.8)	505 (83.2)	ref.	
0.50 (0.17–1.46)	0.21	4 (12.9)	27 (87.1)	0.73 (0.25–2.14)	0.571
ref.		10 (11.6)	76 (88.4)	ref.	
1.31 (0.74–2.34)	0.357	95 (17.4)	451 (82.6)	1.60 (0.80–3.21)	0.185
ref.		75 (17.4)	356 (82.6)	ref.	
1.56 (0.99–2.48)	0.058	15 (12.5)	105 (87.5)	0.68 (0.37–1.23)	0.201
2.54 (1.07–6.07)	0.036	6 (26.1)	17 (73.9)	1.68 (0.64–4.39)	0.294
0.57 (0.13–2.53)	0.456	3 (18.8)	13 (81.3)	1.10 (0.31–3.94)	0.889
1.06 (0.52–2.15)	0.870	7 (13.5)	45 (86.5)	0.74 (0.32–1.70)	0.476
ref.		15 (10.2)	132 (89.8)	ref.	
1.10 (0.68–1.78)	0.688	53 (18.9)	228 (81.1)	2.05 (1.11–3.77)	0.022
ref.		60 (17.9)	275 (82.1)	ref.	
1.02 (0.63–1.65)	0.939	21 (14)	129 (86)	0.75 (0.44–1.28)	0.287
1.07 (0.57–2.01)	0.827	15 (20.8)	57 (79.2)	1.21 (0.64–2.27)	0.562
2.45 (1.44–4.14)	0.001	7 (8.8)	73 (91.3)	0.44 (0.19–1.00)	0.051
1.63 (0.31–8.59)	0.564	4 (57.1)	3 (42.9)	6.11 (1.33–28.02)	0.020
ref.		47 (18.1)	212 (81.9)	ref.	
0.71 (0.49–1.03)	0.067	60 (15.6)	325 (84.4)	0.833 (0.55–1.27)	0.392
ref.		81 (17.9)	372 (82.1)	ref.	
1.07 (0.72–1.60)	0.742	26 (13.6)	165 (86.4)	0.73 (0.45–1.17)	0.185
ref.		10 (26.3)	28 (73.7)	ref.	
0.90 (0.40–2.02)	0.789	29 (25)	87 (75)	0.93 (0.41–2.15)	0.871
0.64 (0.30–1.36)	0.244	28 (10.3)	244 (89.7)	0.32 (0.14–0.73)	0.007
ref.		50 (19.8)	203 (80.2)	ref.	

(Continues)

TABLE 4 (Continued)

Factor	Overload			p	Lack of development	
	High score (%)	Low score (%)	Raw OR (95% CI)		High score (%)	Low score (%)
30–40	69 (22.3)	209 (77.7)	1.40 (0.91–2.17)	0.129	65 (24.2)	204 (75.8)
>40	47 (38.8)	74 (61.2)	3.10 (1.90–5.07)	<0.001	24 (19.8)	97 (80.2)
Failed subjects						
0%	117 (23.8)	374 (76.2)	ref.		107 (21.8)	384 (78.2)
1%–25%	16 (21.6)	58 (78.4)	0.88 (0.49–1.59)	0.677	14 (18.9)	60 (81.1)
26%–50%	12 (24.0)	38 (76.0)	1.01 (0.51–1.99)	0.978	13 (26)	37 (74)
51%–75%	2 (20)	8 (80)	0.80 (0.17–3.82)	0.779	4 (40)	6 (60)
>75%	3 (16.7)	15 (83.3)	0.64 (0.18–2.25)	0.485	5 (27.8)	13 (72.2)
Next exam call (days)						
<18	51 (24.6)	156 (75.4)	ref.		40 (19.3)	167 (80.7)
18–25	63 (24.7)	192 (75.3)	1.00 (0.66–1.54)	0.987	62 (24.3)	193 (75.7)
>25	33 (19.0)	141 (81.0)	0.72 (0.44–1.17)	0.184	37 (21.3)	137 (78.7)

Note: % refers to the percentage in each step. 'High score' implies scores higher than the upper quartile of the scores observed in the sample'; 'low score' implies scores lower than or equal to the upper quartile.

Abbreviations: CI, confidence interval; Raw OR, odds ratio resulting from bivariate analysis; ref., reference category.

Significant values ($p \leq 0.050$) are presented in bold.

facet of observing as the main explanatory variables. This last mindfulness facet refers to the capacity for noticing internal and external experiences and has been considered as a particularly nuclear facet of mindfulness (Lilja et al., 2013). Interestingly, this mindfulness facet might be present in this burnout profile, maybe as an attempt to escape the boredom that is associated to the under-challenged burnout (Montero-Marín, Skapinakis, et al., 2011).

On its part, the worn-out subtype by means of 'neglect' showed significant negative correlations with self-compassion, and with all the mindfulness facets except for observing, and a positive correlation with psychological inflexibility. These results suggest that students who meet the worn-out subtype present an especially low level of mindfulness skills and, therefore, behave automatically, are attached to their thoughts and feelings and react impulsively to them, judging negatively themselves for what they experience. Moreover, they present a tendency to avoid distressful thoughts or emotions, as they could believe that experiencing them would hinder their control. The multiple regression model indicated that 'neglect' was significantly and negatively explained by the absence of self-compassion and the absence of mindfulness facets of acting with awareness and observing. This burnout profile seems to present significant deterioration in their attentional abilities and therefore would specifically require mindfulness training. In this sense, promoting a more positive orientation to experience and increasing attentional and behavioural engagement might be beneficial (Martínez-Rubio et al., 2020).

In summary, in healthcare students of nursing and psychology, the burnout subtypes dimensions of 'overload', 'lack of development' and 'neglect' could be sharing certain trend to psychological inflexibility. This is of special relevance, as this variable—disregarding if it was

referred to as experiential avoidance or psychological flexibility—has been widely studied as a significant mediator of different psychotherapies such as Acceptance and Commitment Therapy (Ciarrochi et al., 2010; Wicksell et al., 2010), Attachment-Based Compassion Therapy (Montero-Marín et al., 2018) or Mindfulness-Based Stress Reduction (Pérez-Aranda et al., 2019). This indicates that psychological flexibility could play a key role in psychological health-related outcomes and should be, therefore, directly addressed by interventions forwarded to treat or prevent all the different manifestations of the burnout syndrome in nursing and psychology healthcare students. On the other hand, each burnout subtype might also have specific relationships with the psychological variables studied. For example, 'overload' could be in need of improving self-compassion abilities, while 'lack of development' would be in need of enhancing non-judging attitudes and 'neglect' of training awareness skills.

Finally, this study also aimed to analyse possible risk factors for developing burnout syndrome among socio-demographic and studies-related variables. The only variable which was identified as a risk factor in every burnout subtype was 'year of study', indicating that those students who were in their fourth or fifth year had significantly more risk of presenting 'overload', 'lack of development' and 'neglect', and which could be attributed to the increased demands, practices and the awareness of one's professional future uncertainty (González Ramírez & Landero Hernández, 2007). Thus, these academic courses should be specific targets in order to prevent the diverse manifestations of burnout. On the other hand, studying more than 40 hours per week was associated with higher 'overload' but with lower 'neglect', which seems reasonable when considering the characteristics of the frenetic and worn-out burnout subtypes. Living alone was related to 'lack of development', and this

		Neglect			
Raw OR (95% CI)	p	High score (%)	Low score (%)	Raw OR (95% CI)	p
1.17 (0.78–1.77)	0.443	47 (17.5)	222 (82.5)	0.86 (0.55–1.34)	0.502
0.91 (0.53–1.56)	0.912	10 (8.3)	111 (91.7)	0.37 (0.18–0.75)	0.006
ref.		68 (13.8)	423 (86.2)	ref.	
0.84 (0.45–1.56)	0.575	13 (17.6)	61 (82.4)	1.33 (0.69–2.54)	0.396
1.26 (0.65–2.46)	0.496	14 (28)	36 (72)	2.42 (1.24–4.72)	0.010
2.39 (0.66–8.63)	0.183	6 (60)	4 (40)	9.33 (2.57–33.92)	0.001
1.38 (0.48–3.96)	0.549	6 (33.3)	12 (66.7)	3.11 (1.13–8.56)	0.028
ref.		27 (13)	180 (87)	ref.	
1.34 (0.86–2.10)	0.199	47 (18.4)	208 (81.6)	1.51 (0.90–2.52)	0.118
1.13 (0.68–1.86)	0.639	31 (17.8)	143 (82.2)	1.45 (0.83–2.53)	0.198

could be explained by the possible boredom experienced, which is present in this burnout profile (Montero-Marín et al., 2009). Finally, the proportion of failed subjects and not having a sufficient family support were also observed as potential risk factors for presenting 'neglect', which probably could be related to lack of social support and acknowledgements, one of the main traits of the worn-out burnout subtype (Montero-Marín, García-Campayo, et al., 2011). In summary, the above-mentioned socio-demographic and studies-related characteristics might help to identify possible cases at risk for developing the different manifestations of burnout in Nursing and Psychology University students.

5.1 | Limitations

The nature of the relations reported here cannot be attributed to causality, although some previous experimental studies have already observed significant effects of variables such as mindfulness and psychological flexibility in different health outcomes, including burnout (De Vibe et al., 2013; Finkelstein et al., 2007; Hunt et al., 2003; Warnecke et al., 2011). The exploratory nature of this study implies that our results need to be interpreted with caution; the potential predictive role of the variables included here should be tested in future studies with adequate approaches. On the other hand, our sample offers a realistic picture of the typical profile of the Psychology and Nursing undergraduate in terms of socio-demographic variables, but considering the low proportion of men studying these degrees, it should be borne in mind that our results may not be generalizable to the whole university student population. Finally, some of the hypothetical statements regarding the

possible impact of motivation on the burnout levels that have been theoretically proposed in previous works (Montero-Marín et al., 2009) could have been tested if some other variables had been included. Future studies could try to analyse the role of autonomous and controlled motivation, next to academic performance, in the burnout subtypes of university students, following the model proposed by Kusrkar et al. (2013).

6 | CONCLUSION

This study contributes to extend the knowledge on the protective role of mindfulness, self-compassion and psychological flexibility on burnout levels in healthcare university students. The significant associations found between these variables underline the need of including them as therapeutic targets when addressing the burnout syndrome. Also, the present study has identified some risk factors for developing burnout in this population, among which 'years of study' stands out, probably related to the increased demands and complexity, and the proximity of the end of the studies, with the subsequent uncertainty regarding the professional future.

ACKNOWLEDGEMENTS

The third and fourth authors have a FI predoctoral contract awarded by the Institute of Health Carlos III (ISCIII; FI17/00180) and the Ministry of Education, Culture and Sports (Spain) (FPU014/04987) at the Institute of Health Research of Aragon (IIS) of Zaragoza. The sixth author has a 'Sara Borrell' postdoctoral contract awarded by the ISCIII (CD20/00181). The last author is supported by the WellcomeTrust Grant (104908/Z/14/Z/).

CONFLICT OF INTEREST

There was no disclosed conflict of interest or funding receiving in conjunction with this study.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE [<http://www.icmje.org/recommendations/>]): (1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content.

PEER REVIEW

The peer review history for this article is available at <https://publons.com/publon/10.1111/jan.14870>.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

David Martínez-Rubio  <https://orcid.org/0000-0002-9346-3869>

Daniel Campos  <https://orcid.org/0000-0001-9903-4064>

Adrián Pérez-Aranda  <https://orcid.org/0000-0002-1602-3413>

REFERENCES

- Baer, R. A., Lykins, E. L. B., & Peters, J. R. (2012). Mindfulness and self-compassion as predictors of psychological wellbeing in long-term meditators and matched nonmeditators. *Journal of Positive Psychology, 7*(3), 230–238. <https://doi.org/10.1080/17439760.2012.674548>
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27–45. <https://doi.org/10.1177/1073191105283504>
- Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., Walsh, E., Duggan, D., & Williams, J. M. G. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329–342. <https://doi.org/10.1177/1073191107313003>
- Barnard, L. K., & Curry, J. F. (2011). Self-compassion: Conceptualizations, correlates, & interventions. *Review of General Psychology, 15*(4), 289–303. <https://doi.org/10.1037/a0025754>
- Bayram, N., & Bilgel, N. (2008). The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Social Psychiatry and Psychiatric Epidemiology, 43*(8), 667–672. <https://doi.org/10.1007/s00127-008-0345-x>
- Beaumont, E., Durkin, M., Hollins Martin, C. J., & Carson, J. (2016). Compassion for others, self-compassion, quality of life and mental well-being measures and their association with compassion fatigue and burnout in student midwives: A quantitative survey. *Midwifery, 34*, 239–244. <https://doi.org/10.1016/j.midw.2015.11.002>
- Biglan, A. (2009). Increasing psychological flexibility to influence cultural evolution. *Behavior and Social Issues, 18*(1), 15–24. <https://doi.org/10.5210/bsi.v18i1.2280>
- Biglan, A., Hayes, S. C., & Pistorello, J. (2008). Acceptance and commitment: Implications for prevention science. *Prevention Science, 9*(3), 139–152. <https://doi.org/10.1007/s11121-008-0099-4>
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary psychometric properties of the acceptance and action questionnaire-II: A revised measure of psychological inflexibility and experiential avoidance. *Behavior Therapy, 42*(4), 676–688. <https://doi.org/10.1016/j.beth.2011.03.007>
- Bränström, R., Kvillemo, P., Brandberg, Y., & Moskowitz, J. T. (2010). Self-report mindfulness as a mediator of psychological well-being in a stress reduction intervention for cancer patients - A randomized study. *Annals of Behavioral Medicine, 39*(2), 151–161. <https://doi.org/10.1007/s12160-010-9168-6>
- Bullock, G., Kraft, L., Amsden, K., Gore, W., Wimsatt, J., Prengle, R., Ledbetter, L., Covington, K., & Goode, A. (2017). The prevalence and effect of burnout on graduate healthcare students. *Canadian Medical Education Journal, 8*(3), e90–108. <https://doi.org/10.36834/cmej.36890>
- Caballero, D. C. C., & Bresó, E. (2015). Burnout in university students. *Psicología Desde El Caribe, 32*(3), 89–108. <https://doi.org/10.14482/psdc.32.3.6217>
- Campos, D., Cebolla, A., Quero, S., Bretón-López, J., Botella, C., Soler, J., García-Campayo, J., Demarzo, M., & Baños, R. M. (2016). Meditation and happiness: Mindfulness and self-compassion may mediate the meditation-happiness relationship. *Personality and Individual Differences, 93*, 80–85. <https://doi.org/10.1016/j.paid.2015.08.040>
- Carlin, M., & Garcés de los Fayos Ruiz, J. (2010). El síndrome de burnout: Evolución histórica desde el contexto laboral al ámbito deportivo. *Anales de Psicología, 26*(1), 169–180.
- Ciarrochi, J., Bilich, L., & Godsell, C. (2010). Psychological flexibility as a mechanism of change in acceptance and commitment therapy. In *Assessing mindfulness and acceptance: illuminating the processes of change* (pp. 51–76). Retrieved from <https://ro.uow.edu.au/hbspapers/1784>
- Coo Calcagni, C., & Salanova Soria, M. (2016). Validación española de la escala abreviada Five Facet Mindfulness Questionnaire (FFMQ): Un estudio piloto. *Ágora de Salud, 3*, 103–110. <https://doi.org/10.6035/agorasalut.2016.3.11>
- da Silva, R. M., Goulart, C. T., Lopes, L. F. D., Serrano, P. M., Costa, A. L. S., & de Azevedo Guido, L. (2014). Hardy personality and burnout syndrome among nursing students in three Brazilian universities-an analytic study. *BMC Nursing, 13*(1), 1–6. <https://doi.org/10.1186/1472-6955-13-9>
- De Vibe, M., Solhaug, I., Tyssen, R., Friberg, O., Rosenvinge, J. H., Sørli, T., & Bjørndal, A. (2013). Mindfulness training for stress management: A randomised controlled study of medical and psychology students. *BMC Medical Education, 13*(1), <https://doi.org/10.1186/1472-6920-13-107>
- Deary, I. J., Watson, R., & Hogston, R. (2003). A longitudinal cohort study of burnout and attrition in nursing students. *Journal of Advanced Nursing, 43*(1), 71–81. <https://doi.org/10.1046/j.1365-2648.2003.02674.x>
- Duarte, J., & Pinto-Gouveia, J. (2017). Mindfulness, self-compassion and psychological inflexibility mediate the effects of a mindfulness-based intervention in a sample of oncology nurses. *Journal of Contextual Behavioral Science, 6*(2), 125–133. <https://doi.org/10.1016/j.jcbs.2017.03.002>
- Farber, B. A. (2001). Subtypes of burnout: Theory, research and practice. *Annual Conference, American Psychological Association*.
- Finkelstein, C., Brownstein, A., Scott, C., & Lan, Y. L. (2007). Anxiety and stress reduction in medical education: An intervention. *Medical Education, 41*(3), 258–264. <https://doi.org/10.1111/j.1365-2929.2007.02685.x>
- García-Campayo, J., Navarro-Gil, M., Andrés, E., Montero-Marin, J., López-Artal, L., & Demarzo, M. M. P. (2014). Validation of the Spanish versions of the long (26 items) and short (12 items) forms of the Self-Compassion Scale (SCS). *Health and Quality of Life Outcomes, 12*(1), 4. <https://doi.org/10.1186/1477-7525-12-4>

- González Ramírez, M., & Landero Hernández, R. (2007). Escala de cansancio emocional (ECE) para estudiantes universitarios: propiedades psicométricas en una muestra de México. *Anales de Psicología*, 23(2), 253–257.
- Gracia-Gracia, P., & Oliván-Blázquez, B. (2017). Burnout and mindfulness self-compassion in nurses of intensive care units: Cross-sectional study. *Holistic Nursing Practice*, 31(4), 225–233. <https://doi.org/10.1097/HNP.0000000000000215>
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, 44(1), 1–25. <https://doi.org/10.1016/j.brat.2005.06.006>
- Heeren, A., Deplus, S., Peschard, V., Nef, F., Kotsou, I., Dierickx, C., Mondillon, L., Robinaugh, D. J., & Philippot, P. (2015). Does change in self-reported mindfulness mediate the clinical benefits of mindfulness training? A controlled study using the French translation of the five facet mindfulness questionnaire. *Mindfulness*, 6(3), 553–559. <https://doi.org/10.1007/s12671-014-0287-1>
- Hollis-Walker, L., & Colosimo, K. (2011). Mindfulness, self-compassion, and happiness in non-meditators: A theoretical and empirical examination. *Personality and Individual Differences*, 50(2), 222–227. <https://doi.org/10.1016/j.paid.2010.09.033>
- Hunt, D. P., Haidet, P., Coverdale, J. H., & Richards, B. (2003). Teaching and learning in medicine: An international the effect of using team learning in an evidence-based medicine course for medical students the effect of using team learning in an evidence-based medicine course for medical students. *Teaching and Learning in Medicine*, 15(2), 131–139. <https://doi.org/10.1207/S15328015TLM1502>
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10, 144–156. <https://doi.org/10.1093/clipsy/bpg016>
- Killam, L. A., Mossey, S., Montgomery, P., & Timmermans, K. E. (2013). First year nursing students' viewpoints about compromised clinical safety. *Nurse Education Today*, 33(5), 475–480. <https://doi.org/10.1016/j.nedt.2012.05.010>
- Kusurkar, R. A., Ten Cate, T. J., Vos, C. M. P., Westers, P., & Croiset, G. (2013). How motivation affects academic performance: A structural equation modelling analysis. *Advances in Health Sciences Education*, 18(1), 57–69. <https://doi.org/10.1007/s10459-012-9354-3>
- Lilja, J. L., Lundh, L. G., Josefsson, T., & Falkenström, F. (2013). Observing as an essential facet of mindfulness: A comparison of FFMQ patterns in meditating and non-meditating individuals. *Mindfulness*, 4(3), 203–212. <https://doi.org/10.1007/s12671-012-0111-8>
- Lindsay, E. K., & Creswell, J. D. (2017). Mechanisms of mindfulness training: Monitor and acceptance theory (MAT). *Clinical Psychology Review*, 51, 48–59. <https://doi.org/10.1016/j.cpr.2016.10.011>
- Losa Iglesias, M. E., de Vallejo, R. B. B., & Fuentes, P. S. (2010). The relationship between experiential avoidance and burnout syndrome in critical care nurses: A cross-sectional questionnaire survey. *International Journal of Nursing Studies*, 47(1), 30–37. <https://doi.org/10.1016/j.ijnurstu.2009.06.014>
- Martínez-Rubio, D., Sanabria-Mazo, J. P., Feliu-Soler, A., Colomer-Carbonell, A., Martínez-Brotóns, C., Solé, S., Escamilla, C., Giménez-Fita, E., Moreno, Y., Pérez-Aranda, A., Luciano, J. V., & Montero-Marín, J. (2020). Testing the intermediary role of perceived stress in the relationship between mindfulness and burnout subtypes in a large sample of Spanish university students. *International Journal of Environmental Research and Public Health*, 17(19), 7013. <https://doi.org/10.3390/ijerph17197013>
- Maslach, C., & Jackson, S. E. (1982). Burnout in health professions A social psychological analysis. Erlbanm, Hillsdale. In G. S. Sanders & J. Suls (Eds.), *Social psychology of health and illness* (pp. 227–251). Retrieved from [https://www.scirp.org/\(S\(351jmbntvn sjt1aadkposzje\)\)/reference/ReferencesPapers.aspx?ReferencelD=731904](https://www.scirp.org/(S(351jmbntvn sjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferencelD=731904)
- McCracken, L. M., & Morley, S. (2014). The psychological flexibility model: A basis for integration and progress in psychological approaches to chronic pain management. *Journal of Pain*, 15(3), 221–234. <https://doi.org/10.1016/j.jpain.2013.10.014>
- Mohebbi, S. Z., Yazdani, R., Talebi, M., Pakdaman, A., Heft, M. W., & Bahramian, H. (2019). Burn out among Iranian dental students: psychometric properties of burnout clinical subtype questionnaire (BCSQ-12-SS) and its correlates. *BMC Medical Education*, 19(1), 388. <https://doi.org/10.1186/s12909-019-1808-3>
- Montero-Marín, J., & García-Campayo, J. (2010). A newer and broader definition of burnout: Validation of the “burnout clinical subtype questionnaire (BCSQ-36)”. *BMC Public Health*, 10, 302. <https://doi.org/10.1186/1471-2458-10-302>
- Montero-Marín, J., García-Campayo, J., Fajó-Pascual, M., Carrasco, J. M., Gascón, S., Gili, M., & Mayoral-Cleries, F. (2011). Sociodemographic and occupational risk factors associated with the development of different burnout types: The cross-sectional University of Zaragoza study. *BMC Psychiatry*, 11, <https://doi.org/10.1186/1471-244X-11-49>
- Montero-Marín, J., García-Campayo, J., Mera, D. M., & Del Hoyo, Y. L. (2009). A new definition of burnout syndrome based on Farber's proposal. *Journal of Occupational Medicine and Toxicology*, 4(1), <https://doi.org/10.1186/1745-6673-4-31>
- Montero-Marín, J., Monticelli, F., Casas, M., Roman, A., Tomas, I., Gili, M., & García-Campayo, J. (2011). Burnout syndrome among dental students: A short version of the “burnout Clinical Subtype Questionnaire” adapted for students (BCSQ-12-SS). *BMC Medical Education*, 11(1), <https://doi.org/10.1186/1472-6920-11-103>
- Montero-Marín, J., Navarro-Gil, M., Puebla-Guedea, M., Luciano, J. V., Van Gordon, W., Shonin, E., & García-Campayo, J. (2018). Efficacy of “attachment-based compassion therapy” in the treatment of fibromyalgia: A randomized controlled trial. *Frontiers in Psychiatry*, 8(JAN), 307. <https://doi.org/10.3389/fpsy.2017.00307>
- Montero-Marín, J., Piva Demarzo, M. M., Stapinski, L., Gili, M., & García-Campayo, J. (2014). Perceived stress latent factors and the burnout subtypes: A structural model in dental students. *PLoS One*, 9(6), 1–8. <https://doi.org/10.1371/journal.pone.0099765>
- Montero-Marín, J., Skapinakis, P., Araya, R., Gili, M., & García-Campayo, J. (2011). Towards a brief definition of burnout syndrome by subtypes: Development of the “Burnout Clinical Subtypes Questionnaire” (BCSQ-12). *Health and Quality of Life Outcomes*, 9, <https://doi.org/10.1186/1477-7525-9-74>
- Montero-Marín, J., Tops, M., Manzanera, R., Piva Demarzo, M. M., Álvarez de Mon, M., & García-Campayo, J. (2015). Mindfulness, resilience, and burnout subtypes in primary care physicians: The possible mediating role of positive and negative affect. *Frontiers in Psychology*, 6(DEC), 1895. <https://doi.org/10.3389/fpsyg.2015.01895>
- Montero-Marín, J., Zubiaga, F., Cereceda, M., Demarzo, M. M. P., Trenc, P., & García-Campayo, J. (2016). Burnout subtypes and absence of self-compassion in primary healthcare professionals: A cross-sectional study. *PLoS One*, 11(6), e0157499. <https://doi.org/10.1371/journal.pone.0157499>
- Nakamura, A. P., Míguez, C., & Arce Fernández, R. (2014). Equilibrio psicológico y burnout académico. *Revista de Investigación en Educación*, 1(12), 32–39.
- Neely, M. E., Schallert, D. L., Mohammed, S. S., Roberts, R. M., & Chen, Y. J. (2009). Self-kindness when facing stress: The role of self-compassion, goal regulation, and support in college students' well-being. *Motivation and Emotion*, 33(1), 88–97. <https://doi.org/10.1007/s11031-008-9119-8>
- Neff, K. D., Kirkpatrick, K. L., & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of Research in Personality*, 41(1), 139–154. <https://doi.org/10.1016/j.jrp.2006.03.004>
- Neff, K. D., Tóth-Király, I., Yarnell, L. M., Arimitsu, K., Castilho, P., Ghorbani, N., Guo, H. X., Hirsch, J. K., Hupfeld, J., Hutz, C. S., Kotsou, I., Lee, W. K., Montero-Marín, J., Sirois, F. M., de Souza,

- L. K., Svendsen, J. L., Wilkinson, R. B., & Mantzios, M. (2019). Examining the factor structure of the Self-Compassion Scale in 20 diverse samples: Support for use of a total score and six subscale scores. *Psychological Assessment, 31*(1), 27–45. <https://doi.org/10.1037/pas0000629>
- Noone, S. J., & Hastings, R. P. (2011). Values and psychological acceptance as correlates of burnout in support staff working with adults with intellectual disabilities. *Journal of Mental Health Research in Intellectual Disabilities, 4*(2), 79–89. <https://doi.org/10.1080/19315864.2011.582230>
- Ortiz-Fune, C., Kanter, J. W., & Arias, M. F. (2020). Burnout in mental health professionals: The roles of psychological flexibility, awareness, courage, and love. *Clínica y Salud, 31*(2), 85–90. <https://doi.org/10.5093/clysa2020a8>
- Pérez-Aranda, A., Feliu-Soler, A., Montero-Marín, J., García-Campayo, J., Andrés-Rodríguez, L., Borràs, X., Rozadilla-Sacanell, A., Peñarubia-Maria, M. T., Angarita-Osorio, N., McCracken, L. M., & Luciano, J. V. (2019). A randomized controlled efficacy trial of mindfulness-based stress reduction compared with an active control group and usual care for fibromyalgia: the EUDAIMON study. *Pain, 160*(11), 2508–2523. <https://doi.org/10.1097/j.pain.0000000000001655>
- Pulido-Martos, M., Augusto-Landa, J. M., & Lopez-Zafra, E. (2012). Sources of stress in nursing students: A systematic review of quantitative studies. *International Nursing Review, 59*(1), 15–25. <https://doi.org/10.1111/j.1466-7657.2011.00939.x>
- Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology and Psychotherapy, 18*(3), 250–255. <https://doi.org/10.1002/cpp.702>
- Ruiz, F. J., Langer Herrera, Á. I., Luciano, C., Cangas, A. J., & Beltrán, I. (2013). Midiendo la evitación experiencial y la inflexibilidad psicológica: Versión española del cuestionario de aceptación y acción - II. *Psicothema, 25*(1), 123–129. <https://doi.org/10.7334/psicothema.2011.239>
- Ruiz, F. J., & Odriozola-González, P. (2017). The predictive and moderating role of psychological flexibility in the development of job burnout. *Universitas Psychologica, 16*(4), 1–8. <https://doi.org/10.11144/Javeriana.upsy16-4.pmrp>
- Suleiman-Martos, N., Gomez-Urquiza, J. L., Aguayo-Estremera, R., Cañadas-De La Fuente, G. A., De La Fuente-Solana, E. I., & Albendín-García, L. (2020, May 1). The effect of mindfulness training on burnout syndrome in nursing: A systematic review and meta-analysis. *Journal of Advanced Nursing, 76*, 1124–1140. <https://doi.org/10.1111/jan.14318>
- Vercambre, M. N., Brosselin, P., Gilbert, F., Nerrière, E., & Kovess-Masféty, V. (2009). Individual and contextual covariates of burnout: A cross-sectional nationwide study of French teachers. *BMC Public Health, 9*(1), 333. <https://doi.org/10.1186/1471-2458-9-333>
- Warnecke, E., Quinn, S., Ogden, K., Towle, N., & Nelson, M. R. (2011). A randomised controlled trial of the effects of mindfulness practice on medical student stress levels. *Medical Education, 45*(4), 381–388. <https://doi.org/10.1111/j.1365-2923.2010.03877.x>
- Wersebe, H., Lieb, R., Meyer, A. H., Hofer, P., & Gloster, A. T. (2018). Relación entre estrés, bienestar y flexibilidad psicológica durante una intervención de autoayuda de Terapia de Aceptación y Compromiso. *International Journal of Clinical and Health Psychology, 18*(1), 60–68. <https://doi.org/10.1016/j.ijchp.2017.09.002>
- Wicksell, R. K., Olsson, G. L., & Hayes, S. C. (2010). Psychological flexibility as a mediator of improvement in Acceptance and Commitment Therapy for patients with chronic pain following whiplash. *European Journal of Pain, 14*(10), 1059.e1–1059.e11. <https://doi.org/10.1016/j.ejpain.2010.05.001>

How to cite this article: Martínez-Rubio D, Martínez-Brotos C, Monreal-Bartolomé A, et al. Protective role of mindfulness, self-compassion and psychological flexibility on the burnout subtypes among psychology and nursing undergraduate students. *J Adv Nurs.* 2021;00:1–14. <https://doi.org/10.1111/jan.14870>

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